

COMPLETE LISTING OF THE CLAIMS

This listing of the claims will replace all prior versions and listings of the claims in this application.

Please amend claims 1, 5, 7-9, 16 and 18 and add claims 19-31, as indicated below.

1. (Currently Amended) An event historian for batch processing comprising:

a history executive element for receiving process event information from one or more input sources operating in physical elements of a process and batch procedure event information that includes batch subprocedure event information from a batch control device, wherein the batch control device is separate from the physical elements of the process, and for automatically deriving relationships among portions of said process event information and batch subprocedure event information based on generated event messages to thereby associate particular process event information with one or more particular batch subprocedures;

a storage element coupled to said history executive element for persistently storing said process event information and said batch procedure event information and said derived relationships in response to requests from said history executive element; and

an event information retrieval element for retrieving said process event information and said batch procedure event information in accordance with said derived relationships in response to requests from an application process.

2. (Original) The event historian of claim 1 further comprising:

a continuous data collection element for gathering continuous data in real time wherein said continuous data relates to at least one procedural element of a batch process.

3. (Previously Presented) The event historian of claim 2 wherein said information retrieval element further comprises:

a batch historian view client application for graphically presenting to a user said batch procedure event information and said derived relationships and said continuous data.

4. (Previously Presented) The event historian of claim 1 wherein said information retrieval element further comprises:

a batch historian view client application for graphically presenting to a user said batch procedure event information and said derived relationships.

5. (Currently Amended) The event historian of claim 1 further comprising:

a batch event generator coupled to said history executive element as a first input source wherein said batch event generator generates events indicative of execution of procedural elements of a batch process; and

a process event generator coupled to said history executive element as a second input source wherein said process event generator generates events indicative of ~~procedural~~ elements performed within equipment used in the control of said batch process.

6. (Original) The event historian of claim 5 further comprising:

a continuous data collection element for gathering continuous data in real time wherein said continuous data relates to at least one procedural element of a batch process,

wherein said process event generator comprises:

an event log generated by said continuous data collection element.

7. (Currently Amended) The An event historian of claim 6 for batch processing, comprising:

a history executive element for receiving process event information from one or more input sources operating in physical elements of a process and batch procedure event information that includes batch subprocedure event information from a batch control device, wherein the batch control device is separate from the physical elements of the process, and for automatically deriving relationships among portions of said process event information and batch subprocedure event information based on generated event messages;

a storage element coupled to said history executive element for persistently storing said process event information and said batch procedure event information and said derived relationships in response to requests from said history executive element;
and

an event information retrieval element for retrieving said process event information and said batch procedure event information in accordance with said derived relationships in response to requests from an application process;

a batch event generator coupled to said history executive element as a first input source wherein said batch event generator generates events indicative of execution of procedural elements of a batch process;

a process event generator coupled to said history executive element as a second input source wherein said process event generator generates events indicative of elements performed within equipment used in the control of said batch process; and

a continuous data collection element for gathering continuous data in real time wherein said continuous data relates to at least one procedural element of a batch process, wherein

said process event generator comprises an event log generated by said continuous data collection element; and

said history executive element includes: a history correlation element for relating said batch events and said process events and said continuous data.

8. (Currently Amended) In a batch processing system, a batch history view client application, comprising:

a user interface system having a computer processor including;

means for retrieving batch procedure event information that includes batch subprocedure event information from a batch control device and process event information from one or more sources operating separate from the batch control device in physical elements of a process corresponding to an identified batch; and

means for visually presenting to a user said batch procedure event information and process event information and automatically deriving relationships among portions of said batch subprocedure event information and process event information to thereby illustrate particular process event information as being associated with one or more particular batch subprocedures.

9. (Currently Amended) In a batch processing system, a batch history view client application, comprising:

a user interface system having a computer processor including;

means for retrieving batch procedure event information from a batch control device and process event information from one or more sources operating separate from the batch control device in physical elements of a process corresponding to an identified batch; and

means for visually presenting to a user said batch procedure event information and process event information and automatically deriving relationships among portions of said batch procedure event information and process event information; and

means for presenting said batch procedure event information and process event information and said derived relationships as a Gantt chart wherein said Gantt chart is representative of procedural elements of the batch procedure.

10. (Previously Presented) The view client of claim 9 wherein said means for presenting said batch procedure event information and process event information and said derived relationships as a Gantt chart further comprises:

means for presenting said Gantt chart in an absolute time scale.

11. (Original) The view client of claim 9 wherein said means for presenting said batch procedure event information and process event information and said derived relationships as a Gantt chart further comprises:

means for presenting said Gantt chart in a batch relative time scale.

12. (Previously Presented) The view client of claim 8 further comprising:
means for retrieving other batch procedure event information corresponding to a second identified batch; and

means for presenting to a user said other batch procedure event information and relationships among portions of said other batch procedure event information wherein said means for presenting said other batch procedure event information includes:

means for indicating differences between said batch procedure event information and said other batch procedure event information.

13. (Previously Presented) The view client of claim 12 wherein said other batch procedure event information represents processing of a golden batch for comparison with other batches represented by said batch procedure event information.

14. (Previously Presented) The view client of claim 12 wherein said means for visually presenting includes means for presenting said batch procedure event information and said relationships in real time as said batch procedure event information is generated.

15. (Previously Presented) The view client of claim 14 wherein said means for presenting said batch procedure event information in real time includes means for scrolling said batch procedure event information horizontally across a user display screen.

16. (Currently Amended) ~~The view client of claim 14 further~~ In a batch processing system, a batch history view client application, comprising:

means for retrieving batch procedure event information that includes batch subprocedure event information from a batch control device and process event information from one or more sources operating separate from the batch control device in physical elements of a process corresponding to an identified batch;

means for visually presenting to a user said batch procedure event information and process event information and automatically deriving relationships among portions of said batch subprocedure event information and process event information;

means for retrieving other batch procedure event information corresponding to a second identified batch;

means for presenting to a user said other batch procedure event information and relationships among portions of said other batch procedure event information; and

continuous data collection means for gathering continuous data in real time; wherein said continuous data relates to at least one data point of a batch process;

wherein said means for presenting said other batch procedure event information includes means for indicating differences between said batch procedure event information and said other batch procedure event information and said means for visually presenting includes means for presenting said batch procedure event information and said relationships in real time as said batch procedure event information is generated, and wherein said means for presenting said batch procedure event information in real time includes means for presenting said continuous data in real time as said continuous data is gathered.

17. (Original) The view client of claim 16 wherein said means for presenting said continuous data in real time includes means for scrolling said continuous data horizontally across a user display screen.

18. (Currently Amended) In a batch processing system, a batch history viewer comprising:

a data access device that retrieves batch procedure event information that includes batch subprocedure event information from a batch control device and that retrieves process event information from one or more sources operating separate from the batch control device in physical elements of a process corresponding to an identified batch process;

a display device that visually presents to a user indications of said batch procedure event information and process event information; and

a routine that automatically derives relationships among portions of said batch subprocedure event information and process event information to be displayed to the user on the display device to thereby associate particular process event information with one or more particular batch subprocedures.

19. (New) The batch history viewer of claim 18, further comprising a continuous data collection element that receives continuous data in real time wherein said continuous data relates to at least one procedural element of a batch process.

20. (New) The batch history viewer of claim 19, wherein the display device includes a batch historian view client application that graphically presents to a user the batch procedure event information and said derived relationships and the continuous data related to at least one procedural element of the batch process.

21. (New) The batch history viewer of claim 18, wherein the display device includes a batch historian view client application that graphically indicates one or more of the derived relationships between the batch procedure event information and the process event information.

22. (New) The batch history viewer of claim 18, further comprising a batch event generator coupled to the data access device as a first input source wherein the batch event generator generates batch events indicative of execution of procedural elements of a batch process and a process event generator coupled to the data access device as a second input source wherein said process event generator generates process events indicative of elements performed within equipment used in the control of said batch process.

23. (New) The batch history viewer of claim 22, further comprising a continuous data collection element that collects continuous data in real time related to at least one procedural element of a batch process and wherein the process event generator comprises an event log generated by the continuous data collection element.

24. (New) The batch history viewer of claim 23, further including a history correlation element that relates the batch events and said process events and said continuous data.

25. (New) The batch history viewer of claim 22, further comprising a continuous data collection element that collects continuous data in real time related to at least one procedural element of a batch process and wherein the display device presents the continuous data in real time as said continuous data is gathered.

26. (New) The batch history viewer of claim 18, wherein the display device presents the batch procedure event information and the process event information and the derived relationships as a Gantt chart.

27. (New) The batch history viewer of claim 26, wherein the display device presents the Gantt chart in an absolute time scale.

28. (New) The batch history viewer of claim 26, wherein the display device presents the Gantt chart in a batch relative time scale.

29. (New) The batch history viewer of claim 18, wherein the display device presents the batch procedure event information and the derived relationships in real time as said batch procedure event information is collected.

30. (New) The batch history viewer of claim 18, wherein the display device presents the batch procedure event information in real time by scrolling the batch procedure event information horizontally across a user display screen.

31. (New) The batch history viewer of claim 18, wherein the batch procedure event information includes S88.01 standard batch procedure categories.